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Required Report - public distribution

**Date:** 23/07/2010

**GAIN Report Number:** NU1010

## Nicaragua

### Biotechnology - GE Plants and Animals

#### Report

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**Report Highlights:**

Nicaragua is implementing the provisions of the Cartagena Protocol. The GON requires a risk analysis for the import of biotechnology products. The risk analysis has not stopped trade between the United States and Nicaragua. On April 13, 2010, the National Assembly published Law 705 on Prevention of Risks from Living Modified Organisms through Molecular Biotechnology.

## **Section I. Executive Summary:**

Yellow corn for animal feed is the main biotechnology crop exported from the United States to Nicaragua. The GON is implementing the provisions of the Cartagena Protocol. It requires notifications of imports of biotechnology products and risk analysis for such imports. The Commission for Risk Analysis of Genetically Modified Organisms (CONARGEN) has performed risk analyses on all genetic events approved by United States for yellow corn destined for processing and feed use. Yellow corn imports from the United States have continued without delays. The Ministry of Agriculture and Forestry (MAGFOR) makes biotechnology import requirements available to the public upon request. Concerning biotechnology Nicaragua is in compliance with the WTO.

## **Section II. Plant Biotechnology Trade and Production:**

Nicaragua does not produce any biotechnology crops. It does not have the technical resources to develop them for commercial purposes and has not imported biotechnology seeds for planting.

Yellow corn is used to produce livestock feed as a main ingredient in poultry feedstuffs. The Nicaragua poultry industry has grown rapidly and produces high quality products. CONARGEN has conducted and approved genetic events approved in the US for yellow corn. U.S. yellow corn imports into Nicaragua for the purposes of processing and for animal feed have been approved. Under CAFTA-DR, Nicaragua imposes a tariff-rate quota (TRQ) for yellow corn that expands gradually and will eliminate tariffs on yellow corn in 2020. Imports of other biotechnology products from other countries are limited or non-existent.

Yellow Corn Statistical Summary (millions of U.S. dollars)

	2006	2007	2008	2009
Total Market Size	15.9	28.1	37.1	23.4
Total Local Production	0.0	0.0	0.0	0.0
Total Exports	0.0	0.0	0.0	0.0
Total Imports	15.9	28.1	37.1	23.4
Imports from the United States	15.9	28.1	37.1	23.3

Note: Exports are FOB values and imports CIF values.

Source: Nicaraguan Customs.

Nicaragua is a large food aid recipient due to its limited capacity to supply food for human and animal consumption. Food insecurity is one of the main limiting factors that hinder Nicaraguan development. Nicaragua has high levels of chronic malnutrition and continues to be dependent on

donor funded food aid assistance. Nicaragua receives food aid from the US and European countries.

### **Section III. Plant Biotechnology Policy:**

Nicaragua is a signatory of the Cartagena Protocol. As part of the process to implement the provisions of the Cartagena Protocol, in 2005 the GON began to require notifications of imports of living modified organisms (LMO) and risk analyses for such imports.

On April 13, 2010, the National Assembly published in the GON official newspaper, *La Gaceta*, Law 705 on Prevention of Risks from Living Modified Organisms through Molecular Biotechnology. Law 705 became official on July 13, 2010, 90 days after its official publication. Law 705 supersedes Chapter XVI (of Law 291, Basic Law on Animal and Plant Health) on Risk Analysis of Genetically Modified Organisms. Law 705 establishes a comprehensive science-based framework for the use LMOs in confined use, research, release into the environment, commercialization, reproduction, multiplication, evaluation of field production, transportation, transit, importation, exportation, production or importation destined for human or animal consumption or for processing, use for agricultural purposes, bio-medication, conservation, preservation and other uses linked to biological diversity.

On August 13, 2003 an executive decree was published in the *La Gaceta* 152 requiring risk analyses on genetically modified organisms (GMOs). However, no commission to perform risk analysis was formed until July 23, 2004, when the CONARGEN was named and sworn into office by former President Bolaños. The Chief Director of the General Direction for Animal and Plant Health Protection (DGPSA) of the Ministry of Agriculture and Forestry (MAGFOR) serves as president of the eight-member commission. Other members include officials from the Nicaraguan Institute for Agricultural Technology, the Ministry of Environment and Natural Resources, the Ministry of Health, the Ministry of Industry Development and Commerce, the National Autonomous University of Nicaragua in León, the National Agrarian University, and the Central American University in Managua. Various Ministries and institutions nominate the members of the CONARGEN, who then must be approved by the President. The CONARGEN is attached to MAGFOR through DGPSA, which also provides administrative support.

With the creation of the CONARGEN, the legal framework for the import, use and handling of GMOs outlined by Law 291, Basic Law of Animal Safety and Plant Health, as implemented by Decree 59-2003, entered into force. Importers of biotechnology products are required to request a risk analysis of an event(s) prior to its importation for the first time. The CONARGEN does not have the technical capability to test if a product is transgenic or not, but it is responsible for reviewing the pertinent information presented by importers for the risk analysis. There are three local laboratories with the technical expertise and equipment that conduct analysis to test for the presence of GMOs.

After conducting the risk analysis, the CONARGEN makes a recommendation to the Minister of Agriculture and Forestry on whether to permit or deny the import of a biotechnology product. The Minister makes the final decision. At present, yellow corn for animal feed (events approved in the United States) is the only biotechnology commodity that has been subjected to risk analyses.

To request approval of a biotechnology variety the petitioner is required to submit the following information to the CONARGEN for biotechnology products for confined use, development of field tests, crop evaluations, seed multiplication, production or importation for the first time for direct consumption, and/or transformation. The specific requirements are as follows:

## **1. General Information**

1.1 Name, home address, telephone number of the company's legal representative or requesting institution.

1.2 Scientific and common names and any other designations used to identify recipient and vector agents involved in the production of each GMO.

1.3 Name, address and phone number of the person (s) who produced/processed or provided the GMO.

## **2. Requirements for transportation and/or importation of GMOs**

2.1 Description of the packing used to transport the GMO.

2.2 Quantitative description of the GMO to be transported, proposed transportation and/or importation schedule.

2.3 Transportation route of the GMO, including a description of the country of origin, port of entry, proposed intermediate and final destinations.

2.4 Description of the procedures and biosafety measures to prevent the escape and propagation of the GMO.

Note: If the GMO is not imported or transported within Nicaragua, the requirements listed above will not apply.

## **3. Specific Information regarding the GMO**

3.1 Objective and purpose for importing the GMO.

3.2 Characteristics of the organism from which the GMO derives.

3.3 Pertinent biological, physiological, genetic and environmental characteristics of the recipient organism including:

3.3.1 Name and identity of the organism.

3.3.2 Pathogenic, toxic and allergenic action.

3.3.3 Natural habitat and origin source and/or diversity of the organism, its distribution and function in the environment.

3.3.4 Mechanisms used by the organism to survive, multiply and spread in the environment.

3.3.5 Transfer channels of genetic material to other organisms. Products of plant origin should include the following information: lifecycle with special emphasis on auto crossbreeding, pollination, habitat, wild species and their distribution, mechanisms and frequency of auto crossbreeding with members of the same species.

3.4 Description of the donor organism; recipient and vector organism, including pathogenic, toxic and allergenic characteristics; country and location where the GMO was collected, developed or produced; and the legal condition of the GMO in the country of origin.

3.5 Description of the actual or anticipated modification granted by the genetic material, incorporated in the GMO (attach maps of this genetic construction). Explain how this genetic modification differs from the unmodified organism. The following elements should be compared to the organism from which the GMO originated:

3.5.1 Pathogenic, toxic and allergenic action for humans and other organisms.

3.5.2 Survival capacity, persistence, competitiveness and transmission into the environment or other pertinent interactions.

3.5.3 Transfer capacity of genetic material and potential transmission channels.

3.5.4 Methods for detecting the organism in the environment and the transfer of the donated nucleic acid.

3.5.5 Characterization of the product or products from the inserted gene (s), and as they originate, stability of the genetic modification.

3.5.6 Detailed description of the molecular biology of the donor-recipient-vector system that sustains the origin of the GMO.

3.5.7 Evaluation of the potential impact on the agricultural environment that could result from releasing the GMO.

3.5.8 Detailed proposed experimental design for releasing the GMO into the environment and production system.

3.5.9 Total quantity of the GMO to be released and to be used for each experiment, if more than one experiment is to be established. Present a calendar indicating the agricultural practices and proposed experiments.

3.5.10 Present a map showing the geographic location of the experiment considering the following:

- i. When many genetic constructions are being tested in different sites, indicate which constructions are to be tested at which site.
- ii. When several experiments are applied in the same site, indicate the specific location for each experiment.
- iii. Describe the former use of the surrounding land and actual location of experiments. For GMOs of plant origin, include a list and description of wild and domestic species genetically related to the GMO that could become recipient of transgenic pollen.
- iv. Specify dimensions and experimental area (excluding edges and rows of non-GMO material), description of places for GMO distribution such as greenhouses, laboratories, and growing chambers.
- v. Specify procedures and biosafety measures to prevent contamination, escape and propagation of the GMO.
- vi. Detailed description of the proposed method for final propagation of the GMO at the end of the experiment including final disposal and cleaning of other materials that were in close proximity with the GMO during the experiment.

#### **4. Additional Specific Information for Confined Use**

- 4.1 Number and volume of the organisms to be used.
- 4.2 Size of the operation.
- 4.3 Proposed confinement measures including the verification of their functioning.
- 4.4 Training and supervision of staff performing assigned duties.
- 4.5 Waste disposal control plans.
- 4.6 Unforeseen accident/event control plans.

#### 5. Information for releasing the GMO into the environment.

Certification extended by the exporter's country of origin authorizing the release of the GMO into the environment must be presented to the Chief Director of DGPSA for subsequent risk analysis.

USDA and MAGFOR have negotiated an agreement related to Article 24 of the Cartagena Protocol on the transboundary movement of LMO for food, feed or for processing. This agreement entered into force on February 18, 2005. The arrangement articulates a practical definition for LMO- and non-LMO shipments for purposes of applying the "may contain" documentation requirement, and recognizes that non-LMO shipments must be defined in a contract as having 95 percent or greater non-LMO content.

At present, the CONARGEN has conducted risk analyses for all genetic events authorized by the United States for yellow corn for purposes of processing and for animal feed only. Risk analyses for human food use have not been requested (please refer to Section V Marketing Issues).

Importers have not asked the CONARGEN to develop risk analysis for any other genetically modified crops besides yellow corn, because of demand. Legislation allows for field-testing of biotechnology crops after the required risk analysis, but field trials of a biotech crop have never been conducted. Coexistence between biotechnology and non-biotechnology crops has not been reported.

At present there is no labeling regulation for food or feed containing GMOs. Therefore, threshold labeling percentages for both intended and adventitious presence of GMOs have not been established. There is no law or regulation governing the use of labeling terms such as "biotech-free," "non-biotech," or "non-GMO."

#### **Section IV. Plant Biotechnology Marketing Issues:**

At present there are not any agricultural products from animal or plant origin that have been developed using new technologies. Likewise, public awareness of new/emerging technologies related to food and/or agriculture is limited. There are only three laboratories nationwide (Central American University, National Autonomous University and Polytechnic University) that perform GMO tests and research.

The Nicaragua market is new to the concept of new technologies. There is no foreseeable demand in the near future for products derived from new technologies, except for yellow corn used for animal feed. Some "anti-new technologies NGOs" are very active in Nicaragua. They lobby against new agricultural technologies, but focus their campaign on agricultural

biotechnology.

### **Section V. Plant Biotechnology Capacity Building and Outreach:**

In September 2006, selected members of the CONARGEN and Nicaraguan biotechnology experts attended a USDA-Cochran funded biotechnology course delivered at Michigan State University (MSU). This course provided guidance and useful information on how to advise legislators on biotechnology matters. This training enhanced the participants' ability to understand the U.S. regulatory framework on agricultural biotechnology, to make informed decisions about risk and risk management, and to maintain access for U.S. biotechnology products in Nicaragua. Ministries with representation in the CONARGEN improved their understanding of biotechnology regulations from science-based education conveyed at the MSU course.

In August 2007, FAS/Managua invited Mr. Federico Alais, an Argentine expert on biotechnology policies, to speak to a wide range of audiences about agricultural biotechnology and commerce of GMOs. During his presentations, Mr. Alais highlighted the Argentine case as a successful example of the use of biotechnology to improve agricultural production, to maintain environment-friendly good agricultural practices, and to promote economic growth through improved trade.

GON officials, faculty members, students, researchers and industry members attended Mr. Alais' presentations. The audiences improved their understanding from examples derived from the Argentine case that showed how a developing country had rationally managed the use of biotechnology, still protecting its biodiversity and doubling its agricultural production with the same inputs.

In May 2008, representatives from local universities (National Agrarian University, National Autonomous University, National University of Engineering, National Polytechnic University and the International School of Agriculture and Husbandry) inaugurated a Biotechnology Institute (Inbion). Inbion members include Cochran alumni. These universities intend to unify their efforts and research on biotechnology to apply and teach the benefits of agricultural biotechnology among Nicaraguan producers. The Inbion lacks operational funding. It is physically located at the National Polytechnic University. The Inter-American Institute for Cooperation on Agriculture assisted Inbion during its launching and in outreach activities.

In June 2008, a Nicaraguan professor from the National Autonomous University from Managua was selected to participate in a Faculty Exchange Program sponsored by USDA. The professor traveled to Texas A&M University to conduct research on different applications of biotechnology, attended classes and developed other skills with Texas A&M professors. Upon his return, the professor shared skills and knowledge among Nicaraguan faculty members, colleagues, students and with Inbion members. The goal is to allow others to benefit from the different techniques concerning the application of agricultural biotechnology to improve production of stable Nicaraguan products with limited supplies including fertilizers and herbicides in areas prone to drought or soil with low fertility.

The Nicaraguan population including the media and legislators has expanded their understanding of biotechnology products. Generally, consumers associated biotechnology exclusively to GMOs. Nonetheless, additional efforts on outreach and education are needed to improve the overall understanding and application of agricultural biotechnology. Lack of access to information had led to the reduced the level of acceptance of biotechnology products among consumers and could become a limiting factor to biotechnology products acceptance in the market.

On April 26, 2009, the Public Affairs Office in the U.S. Embassy in Managua invited Dr. Peter

Gregory through the State Department funded Speaker Program to speak to a wide range of audiences about agricultural applications of biotechnology to improve agricultural production of staple products with limited inputs, and learned lessons about successful applications of trading biotechnology products while maintaining the genetic constitution of native flora. FAS/Managua assisted in carrying out this activity. [Please see report NU9010 for additional information.](#)

Members of the CONARGEN are well educated in different agricultural fields and are inclined to base their decisions on factual scientific data. Due to the fact that the CONARGEN is fairly new (created in 2003) they lack the infrastructure and facilities that would allow them to conduct detailed risk analysis. The CONARGEN has expressed interest in developing a laboratory and office space that would help to develop their work.

## **Section VI. Animal Biotechnology:**

Genetic engineering is not used in Nicaragua for the development of any agriculturally-relevant animals. There are no plans for the development of genetically engineered animals. Nicaragua does not have any legislation or regulations for such purpose. FAS/Managua is not aware of any discussions regarding regulatory, research or trade policies on this technology.

There are no active organizations or public campaigns that lobby either for or against the genetic engineering of agriculturally-relevant animals. The public has limited knowledge of genetic engineering of animals. Nicaragua does not participate in discussions related to genetic engineering or agriculturally-relevant animals in international organizations. There is no funding for development of such activities due to its limited economic relevance and implementation in Nicaragua.